SUBJECT: System 20 Contract Negotiation with Aerojet General Corporation

1. It is requested that Contract FH-2515 be renegotiated for an additional amount of approximately $67,045 with Aerojet General Corporation, Azusa, California. The allocation of funds and the tasks to be accomplished are delineated herein.

2. Allocation of $27,000 is made for the purpose of providing field support of system testing. The test activities to be supported include simulator testing and flight testing. This funding is intended to cover both time and material. Funds allocated for this effort shall be expended only on specific task assignments as authorized by the contracting officer.

3. Funds in the amount of $6,000 maximum are designated for procurement of "off-the-shelf test equipment." These funds shall be expended only as authorized by the contracting officer for procurement of specific items of "off-the-shelf test equipment."

4. Approximately $1,765 is specifically directed to the development and fabrication of one "cooling cart."

5. Development of "special test equipment" and procedures to support testing of System 20 is funded in the amount of approximately $27,035. One set of test equipment and documentation shall constitute the deliverable end items. Specific tasks to be accomplished shall include:

a. Prepare test plans

b. Control panel and cart design and fabrication

Amend #2

c. Pulse generator design and fabrication

d. Temperature standard design and fabrication

e. Detector cooler design and fabrication

f. Collimated test source design and fabrication

g. Test and delivery

6. Design and fabrication of special data reduction equipment is funded to the extent of $5,245. These funds shall be expended only upon authorization of the contracting officer.

7. Conceptual drawings of the special test equipment cart and the cooling cart shall be submitted to the project monitor for his approval prior to fabrication of the units.

8. Funds in the amount of $40,045, Category II, and $27,000, Category IV, are available in the FY-66 budget of ASD/OEL. These are NRO funds. This work is necessary to support an OSA requirement for System 20 which has been approved by NRO. [redacted] ASD/ STAT OEL, is the cognizant program monitor.

[redacted] STAT

I

Copy 1

CJC:66008

18 May 1966

Art:

In accordance with a recent request from Clay, we are pleased to submit proposal CJC:66008 for a Sun Sensor to be used on the number two deliverable unit.

Clay has discussed the technical aspects of the program with Rod; therefore, no technical discussion is forwarded.

Enclosure (1) is a cost breakdown and represents the Salary and Hourly hours necessary to revise a mirror, and design and produce the electronic package. The estimated costs are $5,583, Fee $417, for a total estimated cost of $6,000.

You will note that our direct labor overhead has increased from 130% to 135%. If Clarence desires, I can give him a certification of this increase.

STAT

Encl.

Per mtg with Clay 3 June
This is for labor only - material was authorized by Clay in 17 May ltr to Colin (attached) under T+M Basis
Clay will provide funds for this.
ora

CJC-66008
Enclosure (1)

COST BREAKDOWN

Sun Sensor

	Hours	Rate/Hour $	Amount $		
DIRECT LABOR					
R & D Overhead Pool					
Salaried	257	5.78	1,485		
Hourly	197	3.65	719		
Total Labor				$2,204	
R & D Overhead @ 135%				2,975	
Total Labor					$2,204
Total Direct Labor Overhead					2,975
PLANT TOTAL					5,179
General & Administrative Expense @ 7.8%					404
Estimated Cost					5,583
Fixed Fee					417
TOTAL ESTIMATED COST					$6,000

IDEA-3153/66
Copy 2

17 May 1966

Dear Colin,

You are hereby authorized to engage in the following activities under the time and material portion of Contract FH-2515. This task is specifically directed toward the "Sun Seeker." This activity is authorized and accountable under Task Order I-102. The funding level for this task shall not exceed $1,200.

Items specifically covered under this authorization include:

a. One (1) detector cell, procurement

b. One (1) mirror, fabrication

c. Misc. electronic components, one (1) set, procurement

d. Minimum manpower to order above items

e. Preliminary design sufficient to define above items if effort may be accomplished within funding provision.

As you know, it is necessary to have this kit available and checked out by 24 June 1966. To aid in meeting this date, advanced activity is being authorized by this task order. If you have any questions concerning this direction, please feel free to call.

Yours truly,

/s/

Clay

For material only with possible labor effort limited to several hundred dollars.

cpf

3 June

IN 52008 PRIORITY 12 Jul 66 18 12z

S E C R E T 121753Z CITE [redacted] 2966 25X1

PRIORITY [redacted] 25X1

IDEALIST

ATTN: [redacted] 25X1

RE: CONTRACT FH-2515, SYSTEM 20, AEROJET GENERAL CORP.

DUE TO GROSS SLIPPAGES IN DELIVERY AND HIGH RATE OF POWER UTILIZATION ON CONTRACT, IT IS PARAMOUNT THAT FOLLOWING ACTIONS BE TAKEN:

ITEM 1. DETERMINE PRESENT FINANCIAL STATUS OF CONTRACT.

ITEM 2. DETERMINE FINANCES REQUIRED TO COMPLETE CONTRACT BEYOND PRESENT AUTHORIZATION.

ITEM 3. OBTAIN PROPER DOCUMENTATION FROM CONTRACTOR IF THEY CONTINUE POLICY OF THE CORPORATION ABSORBING ALL OVERRUNS. PRESENT BUDGET REQUIRES TIMELY DEFINITION OF FINANCIAL OBLIGATION, THEREFORE REQUEST ABOVE INFO BY 19 JULY.

S E C R E T

////////END OF MESSAGE//////////

File Copy
TH 2515
Approvals

IDEA-3334/66
Copy 2 of 5

13 September 1966

Dear Colin,

This is to document our telephone conversation on or about 6 September 1966 during which we discussed the installation of interface electronics which are required for the flight test of the W-80C system.

In speaking with Mr. Worthy, he was of the opinion that costs would be in the order of $1,000 for this effort.

You are authorized to expend funds in the amount of approximately $1,000 for this purpose. If it appears that funding at a significantly greater level will be required, please advise me in a timely manner.

The above authorization is subject to the availability of funds in the T&M portion of the W-80C contract; I believe you are in the best position to audit this account.

I wish to emphasize that we must be frugal, lest we exhaust the T&M funds before our forthcoming flight test effort is complete.

Yours truly,

/s/

Clay

SECRET

PRIORITY

IN 52008

12 JUL 66 19 12z

S E C R E T 121753Z CITE [redacted] 2966 25X1

PRIORITY [redacted] 25X1

IDEALIST

ATTN: [redacted] 25X1

RE: CONTRACT FH-2515, SYSTEM 20, AEROJET GENERAL CORP.

DUE TO GROSS SLIPPAGES IN DELIVERY AND HIGH RATE OF MANPOWER UTILIZATION ON CONTRACT, IT IS PARAMOUNT THAT FOLLOWING ACTIONS BE TAKEN:

ITEM 1. DETERMINE PRESENT FINANCIAL STATUS OF CONTRACT.

ITEM 2. DETERMINE FINANCES REQUIRED TO COMPLETE CONTRACT BEYOND PRESENT AUTHORIZATION.

ITEM 3. OBTAIN PROPER DOCUMENTATION FROM CONTRACTOR IF THEY CONTINUE POLICY OF THE CORPORATION ABSORBING ALL OVERRUNS. PRESENT BUDGET REQUIRES TIMELY DEFINITION OF FINANCIAL OBLIGATION, THEREFORE REQUEST ABOVE INFO BY 19 JULY.

S E C R E T

////////END OF MESSAGE//////////

Costs to 12 July 1966 $864,900

per [redacted] 25X1

869,045 CPFF price not including 27% field service

SECRET

IDEA-3258/66
Copy 2

6 July 1966

Dear Colin,

During my recent visit at your facility, I believe Herb, Rod, and I satisfactorily resolved the method by which instrumentation for the simulator and POP test efforts will be applied to the W-80C. This effort is basically divided into the following tasks:

a. Design of pads required for interface of video preamps and GFE amplifier part no. 361233-0100.

b. Design of isolation amplifier and zener regulator for pulse circuits. The instrumented circuits include: common amplifier output, upper limit switch output and number one (1) bar output. Each of these isolation amplifiers shall be identical and no attention shall be given to the polarity of their outputs. The outputs of the amplifiers shall reproduce the pulses' time characteristics and the output shall swing between zero (0) volts and twenty-four (24) volts (approximately). Attention should be given to the length and type of line between these amplifiers and the instrumentation recorder. POP test lines are probably worst case. The input impedance to the recorder is in the order of 3,000 ohms and is "single ended."

c. Thermal evaluation of these interfaces as they may effect the basic W-80C.

d. Fabrication of a quantity of five (5) pads described in item a. These may be fabricated on a common board or on a multiplicity of boards whichever is appropriate.

e. Fabrication of a quantity of three (3) units covered in paragraph b.

f. Installation of assemblies covered in paragraphs d. and e. into the pod.

g. Checkout of installation on a minimum basis.

Since the above described effort is to be carried out on the T&M contract (field support), authorization of the above tasks is required. I, during my recent visit, verbally authorized the task described in paragraph a. It is my understanding that Ed has performed a certain amount of the effort described in paragraph c. To that end, I will formally authorize sixteen (16) hours for the accomplishment of the provisions of paragraph a. and eight (8) hours for the effort associated with paragraph c. The above efforts are accountable under Task Order I-103.

During a discussion with Rod concerning the described activities, I requested a ROM cost on the remainder of the activities. In particular, those activities covered by paragraphs b., d., e., and f. At this time, I have not received a telecon on the matter.

Yours truly,

SIGNED

Clay

IDEA-3259/66
Copy 2

5 July 1966

Dear Colin,

I am dropping you a short note concerning the subject of the twelve (12) Inland Control's model 732 power amplifiers (servo amps). During my recent visit, I was so concerned with the signal processing channels that I did not follow up adequately on this topic.

During my recent visit, I became aware of the fact that representatives from Inland were visiting with your personnel. What resulted from this meeting? In particular, were we able to convince them that their design is faulty and they should be liable for the defective units?

According to my information, we purchased 12 of these units. What is the total cost, including burden?

The information I have received from Rod et al., on this subject may be summarized thusly:

a. Eleven (11) of twelve (12) amps have failed.

b. Failure, in general, appeared as a result of poor design in the "front end" of the amplifier.

c. The amplifiers have been previously used by the U.S. Navy. (What is their reliability history in this application)?

d. No replacements for these units were available from Inland.

e. They (Inland) did not wish to repair the units. (Did they, in fact, refuse to make repairs)?

f. An unknown, but large amount of time and money was expended in shooting trouble, designing our own servo amp, and in fabrication.

It would appear from the information listed above that Inland should assume some financial responsibilities for this problem if, in fact, failure resulted from an inherently bad design and not by reason of our application of the devices.

Please let me know your thoughts on this subject and also the present status of any negotiations with Inland as well as any anticipated actions.

Yours truly,

SIGNED

Clay

IDEA-3154/66
Copy 3

17 May 1966

Dear Colin and Rod,

This will serve to document my conversation with Rod on 17 May 1966 in regard to the model J218 test equipment set and "off-the-shelf" test equipment which will become a part thereof.

a. In the case of "off-the-shelf" test equipment, there is not a requirement to match finishes. The possibility of finish matching on production sets is also quite remote. Match finishes on all special panels or contrast with enclosure.

b. Particular attention should be paid to the location of the c.g. since the J218 will be transported by air.

c. Storage drawers shall be capable of securely holding plug-in preamps, test probes, etc., during transportation.

d. Storage drawers and retractable shelves shall have provisions to secure them during transportation.

e. Please utilize wheels or casters of sufficient diameter so the cart can be manipulated easily on "black top" aprons. The wheels must have locking provisions.

f. Specific consideration should be given to the human engineering aspects of the system. It is recommended that a sloping front panel configuration be utilized so the

scope and other controls and instruments can be viewed or operated conveniently by an operator from a standing position. I am sure you will use good practice in selecting the size of lettering, placement of controls, etc., on the special panels. (Please advise me of the cabinet you intend to use).

g. It is requested that provisions be made for stowing primary power lines, ground leads, etc.

h. Please pay particular attention to the over-all mechanical integrity of the cart, especially if two modular cabinets are utilized.

As delineated in Contract FH-2515, specific authorization for the procurement of "off-the-shelf" test equipment must be made on an item basis. You are authorized to procure one (1) set each of the following items:

a. One (1) rack mounted Tektronix oscilloscope, plug-in amplifier, and test probes. A Tektronix RM545B was recommended in your proposal; however, I believe a less "sophisticated" scope, by reason of the video signals and pulses, is more appropriate for checkout of the system. Please investigate this for me. If your findings show conclusively that a 545 is required, you are authorized to procure it in accordance with the proposal.

b. One (1) Simpson 269-4P multimeter.

Funding for the procurement of the above "off-the-shelf" test equipment is authorized in an amount not to exceed $2,500.

If I can be of further assistance, please call.

Yours truly,

SIGNED

Clay

IDEA-3022-66

DATE: 17 May 1966

SUBJECT: System 20

PARTICIPANTS: [redacted] Aerojet General

STAT

1. A call was received from [redacted] today advising me of another extremely serious problem they have "just encountered." During the procurement portion of the development program, twelve (12) servo amplifiers were procured. During the course of development and testing, ten (10) of the units have been destroyed because of circumstances unknown.

STAT

2. It turns out that the vendor no longer manufactures these units nor will he repair them. The Navy uses these amplifiers also and is trying to force the vendor into another production order. If such a production order results, units will not be available until July or August.

3. [redacted] proposed that Aerojet (at this late date) engage in a servo amp design or try to repair the vendor procured units which are potted.

STAT

4. Continued demonstration of poor program management on the System 20 contract will cause a severe slip in our test schedules as well as in procurement.

SIGNED

[redacted]

25X1

IDEA-3080/66
Copy 205

4 April 1966

Dear Colin,

As a result of my recent visit and perusal of both Al and Neil's monthly reports, I would like to make a few comments concerning both programs.

a. Microelectronics - It appears from the reports that we still are not "out of the woods" with this item. Perhaps there may still be a "people problem," a facility problem, but definitely a process control problem. In the case of the prototype systems, we are sensitive to cost and delivery. Because of the problems which have evidently been encountered since my visit of 3 March 1966, at which time there were no problems, I am again becoming very concerned with the prospect of fabricating production "boards" in an economical, timely, and reliable manner. I feel that you, too, have some anxiety concerning the potential problems which could result from a production order of the two jobs. These problems are sometimes evasive and unpredictable, but we must do everything possible to solve the existing problems and to predict potential problems as they could effect production.

b. Dome Heating - W-80C - When the "cold environment" became known, your engineering personnel evidently performed an analysis and concluded ice could form on the IR dome. Methods of handling this potential problem were proposed and the effort was scheduled on the milestone chart. Research in materials and techniques for removing the ice proved to be unsatisfactory from one point or another. Quoting from the monthly report: "... it became obvious that more assurance was required that dome heating

was really required. On 25 February a discussion was held with aerodynamicists associated with Bill and Fred ...." While I have the utmost respect for Bill, Fred, and their engineering personnel's technical competence, I have made it known to your engineering department that I cannot accept verbal, undocumented information stating icing is not a problem. I am willing to deviate from the requirement for a dome deicing if and only if satisfactory documented evidence based on worst case conditions is presented. My position would be very precarious if the icing condition should exist in the field and my only reason for not providing deicing was a "third hand" statement that "it cannot happen." If deviation to the requirement is desired, please provide conclusive evidence in the immediate future since prototype delivery time is drawing near.

c. W-80C Simulator Testing - The on schedule delivery of the W-80C system is important since it will undergo approximately two weeks of testing at the simulator. The simulator facility has been tentatively scheduled for this effort. If delivery of the first prototype unit is going to deviate from 16 April, please advise me of the new delivery date via telecon as soon as it can be determined. I have provided the facility with preliminary technical information obtained from Neil during my recent visit. Within the next couple of weeks, it will be advantageous for Neil to visit the facility with me. A few days of field support during set up and the initial simulator runs will be required. As a point of general information, we place all equipment on a simulator and do not perform field tests prior to the time simulator tests are complete. Many systems go on the simulator prior to detailed hardware design.

d. W-80C "Field Test" - Upon completion of the simulator testing, the first prototype will become available for installation and checkout on the

test bed. It has not been determined if the test bed will be deployed from Fred's area, from another relatively near test area, or if it will be deployed to some remote area. Further, it has not been determined if Fred's "test people" will be involved or if my company will provide these people. Participation in some of the proposed tests is frowned on by some of Fred's men. It is probably safe to assume that Fred will incorporate all necessary wiring, most of the instrumentation, and perhaps furnish certain portions of the data processing. The matter of field testing is being coordinated here since participation by many external activities and facilities is required. Please maintain close liaison with me so an acceptable, coordinated test problem may be evolved.

Action Items: In order to help support the simulator test, please furnish me with the following information on the W-80C ASAP in a quantity of two (2) each:

a. Pod outline drawings.

b. Ass'y drawing of pod, radome, and scanner showing exact mounting locations.

c. Type of connectors - operational.

d. Pin assignment and functional designations. Also voltage levels or signal characteristics. (re operational connectors)

e. Types of special "test" connectors.

f. Pin assignment and functional designations. Also voltage levels or signal characteristics (re test connectors).

g. Minimum load impedance to be presented by recorders or other instrumentation. Please do not give a universally high "Z" requirement if it is not necessary.

h. Electrical schematics, "card level."

i. Electrical schematics, "system level."

If you have any questions concerning my comments or requests, please do not hesitate to call.

Yours truly,

Clay

Distribution:
Copy 1 - [redacted] - Aerojet
2 - [redacted]
3 - [redacted]
4 - ASD Chrono.
5 - OSA Reg.
ASD/OEL: [redacted]:bt:7671

STAT
STAT
STAT

DE-183-66

12 May 1966

MEMORANDUM FOR THE RECORD

SUBJECT: Contract No. FH-2515--Contractor's Request for an Additional $45,000

1. Amendment No. 3 to Contract FH-2515 has been written as a result of the Contractor's letter of 28 April 1966 and the cost breakdown therewith. Funds in the amount of $45,000 were made available in Headquarters' message 9640 dated 6 March 1966.

2. The Contractor has advised the overrun was due to a number of technical reversals and several other factors including redoubling of the Contractor's efforts to maintain schedule after the delivery of the first W80C System.

3. This requirement for additional funds caused considerable reverberation at Headquarters and resulted in several visits to the Contractor's plant as well as a series of phone calls between Mr. [redacted] STAT As a result of this concern over the increased cost of the Program, [redacted] STAT Vice-President and General Manager of the Von Karman Center, visited Headquarters and reviewed the circumstances with [redacted] STAT. Following that meeting, funds were made available in the amount of $45,000.

4. It seems apparent that the Contractor is doing everything it can to complete the contract within available funding, but it is feeling the result of redirection of the Program and its failure to redeploy excess personnel resulting from the redirection. Because of the technical reversals and the rapid pace of the Program, the Contractor has explained its difficulty in keeping on top of the cost situation. In fact, [redacted] STAT the Contract Manager, is now fearful additional funds of nearly $20,000 may still be required to complete the Program. However, following conversations between the Contracting Officer and [redacted] STAT, it is understood that the matter has been placed before Mr. Rogers for a decision as to whether the Contractor will assume any additional costs that may result.

5. In view of the foregoing and the definite possibility of a future overrun, it was quite apparent that the Contractor would require every dollar of the additional $45,000 requested in its letter of 28 April 1966, and the Amendment has been prepared accordingly.

[redacted] STAT

28 October 1965

Dear Frank:

Receipt and acceptance of FH-2515 is acknowledged. The following comments are submitted as a matter of clarification.

1) It is assumed that Clarence will perform any and all audit work which may be required as a result of Clause Part IV-B of the schedule.

2) It is recognized that due to revised requirements which have occurred since beginning this program, the device as outlined in our Proposal CJC:65002B dated 14 September 1965, has changed and will continue to change until technical concurrence is received. It is expected that the regular monthly technical report will contain a summary of changes. Whenever such changes cause a revision in either cost or delivery, then in accordance with the Changes Clause 33 of the General Provisions, we will forward to you these changes for your concurrence.

3) It is assumed that the overhead rate negotiated by the Defense Contractors Audit Agency, resident at our plant, will constitute compliance with the intent of Clause 45 of the General Provisions.

4) It is assumed that compliance with Clause 5, "Inspection and Correction of Defects", of the General Provisions will have been met when the device has been reviewed and accepted by Clay.

5) In accordance with your telephone conversation with Colin relative to the certificate on page 2, be advised that the certificate was not completed due to security limitations. Colin's signature authority granted by the Board of Directors is up to $500,000. I am the only one cleared who is authorized to sign for this amount.

Very truly yours,

Bill

Bill

APPROVED: FH-2515

[redacted]

STAT

Howard

SECRET
IDEALIST

File
2515

IDEA-0154-69
Copy 6 of 7

13 February 1969

1
INFO —
(1) KMD
(2) BFD
(3) Comptroller

MEMORANDUM FOR: Deputy for Operations, OSA

SUBJECT: System 20/HAVE DRILL

1. Personnel from our two staffs have had recent verbal discussions concerning employment of ~~System 20~~ against the ~~HAVE DRILL~~ vehicle(s). The operational advantages that could be realized are, of course, recognizable.

2. This proposal is developing strong interest and this office recommends it now be pursued formally. We will be ready to discuss the technicalities as soon as practical.

STAT

Lt. Colonel, USAF
Acting Deputy for Materiel, OSA

AD/M/OSA/ [redacted] :let (13 Feb 69) STAT

Distribution:
#1 - D/O/OSA
#2 - IDEA/O/OSA
#3 - SAS/O/OSA
#4 - AVD/M/OSA
#5 - D/M/OSA (Chrono)
#6 - COMPT/OSA
#7 - RB/OSA

IDEALIST
SECRET

SECRET
Excluded from automatic downgrading and declassification

#2

CJC-67009A

7 August 1968

Dear Howard:

In accordance with a request from Clay to update Phase II of Proposal CJC-67009, the attached cost sheets are therefore submitted. One change in hours was necessary due to the unavailability of the same personnel upon which the first proposal was based.

Very truly yours,

[redacted] STAT

Enclosure

CJC-67009A

SUMMARY - PHASE II

DIRECT LABOR:

R&D Overhead Pool	Hours	Rate -$-	Amount -$-
Salaried	3,524	6.46	22,765
Hourly	3,480	3.89	13,537

Total Direct Labor		$ 36,302
R&D Overhead @ 135%		49,008

MATERIALS:

Purchased Parts	32,070	
Materials Burden @ 10%	3,207	
Total Materials Including Burden		35,277
Subtotal		$120,587
Gen. & Adm. Exp. @ 9.3%		11,215
Total Estimated Cost		$131,802
Fixed Fee @ 8%		10,544
GRAND TOTAL		$142,346

CJC-67009A

PHASE II - DIGITAL COMPUTER - - Elevation Design

DIRECT LABOR:

R&D Overhead Pool	Hours	Rate -$-	Amount -$-
Salaried	400	6.46	2,584
Hourly	160	3.89	622

Total Direct Labor	$3,206
R&D Overhead @ 135%	4,328
Subtotal	$7,534
Gen. & Adm. Exp. @ 9.3%	701
Total Estimated Cost	$8,235

CJC-67009A

PHASE II - DIGITAL COMPUTER - - Package Design

DIRECT LABOR:

R&D Overhead Pool	Hours	Rate -$-	Amount -$-
Salaried	560	6.46	3,618
Hourly	1,680	3.89	6,535

Total Direct Labor		$10,153
R&D Overhead @ 135%		13,707

MATERIALS:

Purchased Parts	32,070	
Materials Burden @ 10%	3,207	
Total Materials Including Burden		35,277
Subtotal		$59,137
Gen. & Adm. Exp.@ 9.3%		5,500
Total Estimated Cost		$64,637

CJC-67009A

PHASE II - DIGITAL COMPUTER - - Assembly

DIRECT LABOR:

R&D Overhead Pool	Hours	Rate -$-	Amount -$-
Salaried	160	6.46	1,034
Hourly	1,240	3.89	4,824

Total Direct Labor	$ 5,858
R&D Overhead @ 135%	7,908
Subtotal	$13,766
Gen. & Adm. Exp. @ 9.3%	1,280
Total Estimated Cost	$15,046

CJC-67009A

PHASE II - DIGITAL COMPUTER - - Test and Interface

DIRECT LABOR:

R&D Overhead Pool	Hours	Rate -$-	Amount -$-
Salaried	400	6.46	2,584
Hourly	400	3.89	1,556

Total Direct Labor	$4,140
R&D Overhead @ 135%	5,589
Subtotal	$9,729
Gen. & Adm. Exp. @ 9.3%	905
Total Estimated Cost	$10,634

CJC-67009A

PHASE II - DIGITAL COMPUTER - - Supervision Other than Program Management

DIRECT LABOR:

R&D Overhead Pool	Hours	Rate -$-	Amount -$-
Salaried	564	6.46	3,643

Total Direct Labor	$3,643
R&D Overhead @ 135%	4,918
Subtotal	$8,561
Gen. & Adm. Exp. @ 9.3%	796
Total Estimated Cost	$9,357

CJC-67009A

PHASE II - DIGITAL COMPUTER - - Program Management

DIRECT LABOR:

R&D Overhead Pool	Hours	Rate -$-	Amount -$-
Salaried	1,440	6.46	9,302

Total Direct Labor	$ 9,302
R&D Overhead @ 135%	12,558
Subtotal	$21,860
Gen. & Adm. Exp. @ 9.3%	2,033
Total Estimated Cost	$23,893

A # 11 Copy 1

CJC 68012

File 250

5 June 1968

Dear Howard:

In accordance with our recent meeting, herewith attached is a CPFF Proposal which covers the following scope of work.

A. Investigations, analyses, drawings and reports as follows:

1. Cantilever pod design
2. Mechanical - thermal test plan
3. Roll stabilization investigation
4. Weight and power estimate (including computer)
5. Drop-out logic investigation
6. System noise evaluation
7. Reconfigure System #2 to be same as #1
8. Line drive evaluation (common amp, bar 1, up limit)
9. Angle gate re-evaluation

B. Mechanical - Thermal flight mock-up as follows:

1. Design - Complete design changes as required to conform thermal pod to cantilever configuration. This design will be coordinated with vehicle personnel.

2. Fabrication and Instrumentation - The existing thermal test pod will be modified to comply with the new cantilever design and provide a mechanical-thermal test unit. The test pod will contain loads to represent the W80 weight and power distribution and shall be instrumented to measure temperature and vibration during test flights. As a minimum, temperature sensors shall measure telescope, detector and skin temperatures and vibration data shall be taken for at least three different locations.

3. Interface - The mechanical-thermal test pod shall be interfaced with the test bed vehicle. Accelerometers and thermal sensors shall be specified along with required instrumentation amplifiers and recording devices.

4. Flight Test Report - Upon conclusion of two or three flight tests (conducted as T&M), the flight test data will be reduced and submitted as an informal report.

C. Fabrication and assembly of two cantilever pods. Two new pods will be fabricated and assembled to the new cantilever design. These pods are to contain the two developmental units in the final cantilever form.

It is estimated that the following effort will be needed to complete the phases of the foregoing scope of work.

A-1	240 SH	320 HH
A-2	120 SH	16 HH
A-3	240 SH	48 HH
A-4	120 SH	12 HH
A-5	96 SH	16 HH
A-6	88 SH	48 HH
A-7	40 SH	80 HH
A-8	40 SH	8 HH
A-9	60 SH	8 HH
B-1	596 SH	80 HH
B-2	140 SH	548 HH
B-3	240 SH	560 HH
B-4	160 SH	80 HH
C	240 SH	600 HH
	2420	2460

In accordance with the attached, it is estimated that the proposed work will cost $71,094 with a fixed fee of $5,687 for an estimated total of $76,781.

Colin

CJC:68012
Enclosure 1

COST BREAKDOWN

	Hours	Rate/Hour $	Amount $		
DIRECT LABOR					
R&D Overhead Pool					
Salaried	2420	6.37	15,415		
Hourly	2460	3.82	9,397		
Total Labor				$ 24,812	
R&D Overhead @ 135%				33,496	
Total Labor Including Burden					$ 58,308
MATERIALS					
Raw Materials		6,125			
Purchased Parts		-			
Subcontracting		-			
Total Materials				6,125	
Materials Burden @ 10%				612	
Total Materials Including Burden					6,737
PLANT TOTAL					$65,045
General & Admin. Expense @ 9.3%					6,049
Estimated Cost					$ 71,094
Fixed Fee					5,687
TOTAL ESTIMATED COST INCLUDING FEE					$ 76,781

Accepted 15,000

File
2515

February 27, 1968

2+3

Dear Howard:

The other day we talked about revising the work statements of the two contracts. The S22 isn't so bad, but the W80C is a bit of a problem. I think what I have as a suggested work statement is the simplest approach. You could go back through a complete rewrite, but I don't think it is worth the trouble.

For your information, we have had to rent a large station wagon in order to haul the two W80C's around. Cost is about $13 per day plus mileage. I told Al to advise Clay that this was some additional expenditure we hadn't counted on. Originally we were using a private station wagon, but they dropped the rear end or transmission out of it, so we have had to go the rental route.

Colin

3/1/68
Forwarded these to Clay DeWitt for his concurrence.

Doc 190-1
Item 1

SCOPE OF WORK W80C

PART I

WORK STATEMENT

Exhibit 'A' to the Schedule sets forth the basic scope of work to be performed under this contract. Exhibit 'A' was subsequently revised by Amendments 1 through 7 to provide for additional items of work. Exhibit 'A' is revised by this Amendment to specify the following as deliverable under the Contract.

a. One (1) airworthy W80C system with discrete detector amplifiers.

b. One (1) airworthy W80C system with thin film micro-electronic detector amplifiers.

c. One (1) spare set (110 modules) of discrete detector amplifiers.

PART II

COMPLETION AND DELIVERY SCHEDULE

One (1) W80C system (included above) shall be delivered as an operational unit. The second system shall be turned back to the Contractor for incorporation of the Amendment 6 Elevation Encoder.

ITEM I - Prototype development

Delivery first unit by March 29, 1968.

Delivery Second Unit (complete with encoder) by December 1, 1968.

ITEM III - Documentation

A. Same.

B. Same.

C. May 1, 1968

D. May 1, 1969

2510

R & D

Bd 10/7/65
2500 - T&M

PROPOSED WORK STATEMENT

2515
75 K

Personnel, facilities and material shall be provided to perform the following delineated tasks:

A. Investigations, analyses, drawings and reports as follows:

1. Cantilever pod design
2. Mechanical - thermal test plan
3. Roll stabilization investigation
4. Weight and power estimate (including computer)
5. Drop-out logic investigation
6. System noise evaluation
7. Reconfigure System #2 to be same as #1
8. Line drive evaluation (common amp, bar 1, up limit)
9. Angle gate re-evaluation

B. Mechanical - Thermal flight mock-up as follows:

1. Design - Complete design changes as required to conform thermal pod to cantilever configuration. This design will be coordinated with vehicle personnel.

2. Fabrication and Instrumentation - The existing thermal test pod will be modified to comply with the new cantilever design and provide a mechanical-thermal test unit. The test pod will contain loads to represent the W80 weight and power distribution and shall be instrumented to measure temperature and vibration during test flights. As a minimum, temperature sensors shall measure telescope, detector and skin temperatures and vibration data shall be taken for at least three different locations.

3. Interface - The mechanical-thermal test pod shall be interfaced with the test bed vehicle. Accelerometers and thermal sensors shall be specified along with required instrumentation amplifiers and recording devices.

4. Flight Test Report - Upon conclusion of two or three flight tests (conducted as T&M), the flight test data will be reduced and submitted as an informal report.

C. Fabrication and assembly of two cantilever pods. Two new pods will be fabricated and assembled to the new cantilever design. These pods are to contain the two developmental units in the final cantilever form.

LEGEND

△ START
△ COMPLETE
△ UNIT IDENT.

PROGRAM SCHEDULE

PREPARED BY _____ DEPT. _____ DATE _____
APPROVED BY _____ DEPT. _____ WO/PROPOSAL NO. _____
TITLE _____

TIME PERIOD (SUMMARY)

PROPOSED SCHEDULE

START DATE:

TASK-NAME	JUNE		JULY				AUG				SEPT					OCT				NOV									REMARKS
	23	30	7	14	21	28	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
CANTILEVER POD DES							△																					
M-T TEST PLAN			△																									
ROLL STAB.					△																							
WT & BUCR					△																							
DROP OUT LOGIC									△																			
SYSTEM NOISE							△																					
RECONFIG. #2				△																								
LINE DRIVER			△																									
ANGLE GATE									△																			
M-T MOCK UP DES										△																		
FAB & INST.												△																
INTERFACE														△														
FLT TEST RPT					DEPENDS ON AVAIL. A/C																							
FAB & ASSY 2 PODS																			△									

DEFENSE CONTRACT AUDIT AGENCY
CAMERON STATION
ALEXANDRIA, VIRGINIA 22314

File
FH-2515

OSA-0166-68
L-68-22-103

REPLY TO:

STAT

February 26, 1968

SUBJECT: Advisory Report on Cost Evaluation
Aerojet-General Corporation
Electronics Division
Azusa, California
Contract No. FH-2515

TO : Contracting Officer

1. Purpose of Evaluation. As requested, January 18, 1968, we evaluated the subject contract proposal to determine the reasonableness of estimated costs for performing the environmental test of 100 microelectronic modules incorporated in System No. 2 and furnishing one set of W80C spares.

2. Results of Evaluation.

a. Based upon our examination, we recommend acceptance of the $4,575 proposed price for the integration and test phase.

b. We recommend acceptance of $72,665 for one set of W80C spares. Cost questioned of $521 includes the cost of 2 T.E. Coolers at $440 plus applicable G&A and profit. The contractor advised that these items were not necessary and should be deleted from the proposal.

c. Our recommendations do not include the possible effects of the results of a technical review of the quantitative and qualitative aspects of the proposal. Our results are therefore qualified since additional adjustments could result if a technical review were performed.

3. Basis of Preparation of the Contractor's Proposal. The proposed direct labor rates are average actuals for the three month period ended November 30, 1967 escalated at .84% to February 1968.

The proposed cost of purchased parts applicable to the W80C spares were taken from vendors' invoices and, where necessary, up-dated by telephone quotations.

4. Scope of Evaluation. Our evaluation included a selective review of available records and documentation, a material price test, tests of the mathematical accuracy of the proposal, and inquiry with the cognizant audit office concerning indirect expense rates.

5. Discussion with Contractor. The contents of this report were not discussed with the contractor's representative.

6. Negotiation Meeting. We will gladly provide accounting counsel and any additional audit service which may be required at negotiation.

STAT

DCAA Representative - APL